

**CSCAPE 2005: NOAA Ship *David Starr Jordan***  
**Weekly Science Report – Leg 5**

20 October 2005, Jim Carretta – Cruise Leader, but only for four more days.

**SCIENCE SUMMARY: 13 October – 19 October 2005**

**Sightings and Effort Summary for Marine Mammals**

The *David Starr Jordan* dodged a weather bullet when the freezer/refrigerator system went wobbly and we had to pull into San Francisco for repairs. Instead of running for the cover of Drake's Bay to avoid 35 kt winds and 18 ft swells, we were instead forced to purchase art, eat garlic-laden food, bet horses, hang out with Suzanne Yin (see photo below), and sample local beer. Not quite an island stop, but it'll do. By my estimates, the scientific party alone contributed approximately \$2,000 – \$4,000 to the local economy. Most of this was in the form of beer and gambling. Nevertheless, there is science to report on prior to and after our inport. The weather has dramatically improved and we've been very busy with mixed schools of common and striped dolphins, Dall's porpoise, fin and humpback whales, lots of photos and biopsies, big yellow Argo buoys...read for yourself...



Suzanne Yin relaxes aboard the *David Starr Jordan* in San Francisco during her Honolulu inport. Yin was later caught stealing completed CSCAPE marine mammal sighting forms.

### Sightings and Effort Summary for Marine Mammals

<u>Date</u>	<u>Start Stop</u>	<u>Position</u>	<u>Total Distance</u>	<u>Avg. Beaufort</u>
101305	0731	N37:14.73 W123:00.46	79.7 nmi	4.6
	1827	N38:01.65 W123:46.31		
101405		SAN FRANCISCO INPORT FOR REPAIRS/WEATHER		
101505		SAN FRANCISCO INPORT FOR REPAIRS/WEATHER		
101605		SAN FRANCISCO INPORT FOR REPAIRS/WEATHER		
101705	1053	N37:50.70 W122:49.50	67.7 nmi	2.0
	1802	N38:21.66 W123:37.65		
101805	0738	N38:53.93 W124:17.66	59.1 nmi	2.0
	1731	N39:16.39 W125:56.67		
101905	0746	N39:16.50 W126:00.01	61.4 nmi	2.0
	1831	N40:20.40 W126:13.81		

CODE	SPECIES	TOT#
013	Stenella coeruleoalba	2
017	Delphinus delphis	6
021	Grampus griseus	3
022	Lagenorhynchus obliquidens	2
027	Lissodelphis borealis	1
037	Orcinus orca	1
044	Phocoenoides dalli	15
070	Balaenoptera sp.	8
074	Balaenoptera physalus	16
075	Balaenoptera musculus	6
076	Megaptera novaeangliae	15
077	unid. dolphin	1
079	unid. large whale	3
TOTAL		79

### Biopsies (Tim O'Toole, Gary Friedrichsen, Laura Morse, Paula Olson)

Species	13-19 October	CSCAPE cumulative
Minke whale		1
Humpback whale		21
Blue whale		8
Fin whale		1
Sperm whale		11
Baird's beaked whale		2
Short-beaked common dolphin	34	111
Pacific white-sided dolphin		21

Northern right whale dolphin		6
Striped dolphin		2
Dall's porpoise	1	4
Killer whale		5
Risso's dolphin		4

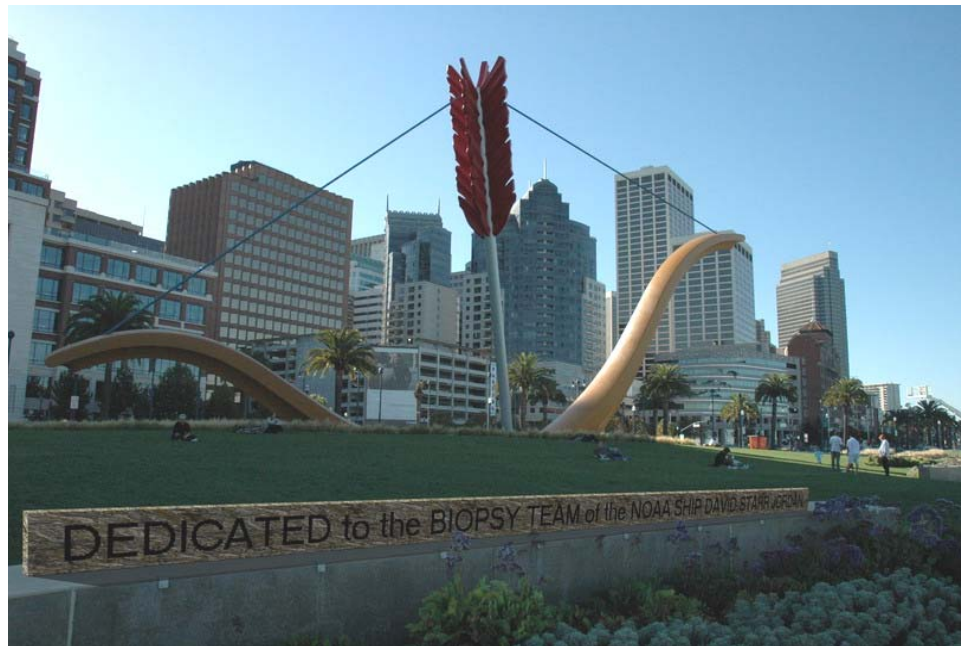


Photo by R. Hood

**Photo-Project** (Cornelia Oedekoven, Holly Fearnbach and Kathy Hough)

Summary:

Blue whales: 1

Fin whales: 5

Dall's porpoises: 1\*

Short-beaked common dolphins: 3\*

Short-beaked common and striped dolphins mixed: 1\*

\*schools photographed

This week's report really only includes three days of taking pictures of cetaceans – 17 through 19 Oct – which was due to a lack of opportunities during 13 Oct and the apparent lack of cetaceans during our stop in San Francisco. However, a rather big-eyed fellow was captured on photo on 13 October:



Elephant seal bobbing at the surface as the ship went close by (photo: Peter Pyle).

During these three days, the trigger was pushed frequently though as we found ourselves surrounded by incoming short-beaked common dolphins in high numbers. Some of these schools included striped dolphins as well which was photo-documented during one sighting. In this school, the striped dolphins formed a distinct single-species cluster which displayed the more typical streaker behavior of running away from the ship, hence the wonderful display of rear-ends in the pictures. We also were able to add to our collection another five different individuals of anomalously dark colored short-beaked common dolphin that are lacking the thoracic patch on the sides. Quite a few cow-calf pairs of short-beaked common dolphins seemed to come over to ride the bow of the ship. A total of eleven individuals, which were either calf or distinctly smaller than adult animals, were photographed, plus one cow-calf pair of striped dolphins.



Short-beaked common dolphin calf porpoising alongside the ship (photo: Cornelia Oedekoven).

### **Seabird Report: (Rich Pagen and Peter Pyle)**

Leg “5b” has, in many ways, been the alter ego of Leg “5a.” There have been sightings of t-shirts and shorts on the flying bridge; the abundance and diversity of seabirds have increased; heck, even the water tastes different! Heading NW out of San Francisco, we had the good fortune of crossing Cordell Bank, with its flotillas of Cassin’s Auklets, roving mobs of Northern Fulmars, and squadrons of Buller’s Shearwaters. The productivity continued offshore, probably due to the influence of the Point Arena upwelling plume, sending cold, nutrient-rich water out in our direction. It was on the outer edge of this plume that we had one of the highlights of our week: Stejneger’s Petrel, replete with nine very enlargeable photographs. This is about the sixth record for this species in North American waters. Heading north towards the Mendocino Ridge proved productive as well. The prevailing NW current tends to push the water that must have upwelled along the ridge last week south, and we had the good fortune of spending much of the 19th in this rich water. Many Cook’s Petrels were present including flocks of 25 and 18, feeding over albacore. Long-tailed Jaegers were also a highlight in this area, including one flock numbering 26 birds. Despite a few days with good conditions for passerines (cloudy sky, south wind, good visibility), only a Yellow Warbler made it aboard. Perhaps they couldn’t make it through the gantlet of jaegers! Other birds of interest included Northern Pintail, Green-winged Teal, Fork-tailed Storm-Petrel (thanks Laura), and a flock of 190 Aleutian Canada Geese finishing up their over-water journey across the North Pacific.

### **Oceanographic Operations (Candice Hall & Liz Zele)**

Although most of our week was occupied by refer repairs in port, we’ve had an exciting time oceanographically. We finally reached the deployment location for the first of our ARGO floats.

‘Argo is a global array of 3,000 free-drifting profiling floats that will measure the temperature and salinity of the upper 2000 m of the ocean. It uses a fleet of robotic floats that spend most of their life at depth and that surface regularly to make the temperature and salinity profile measurements. This will allow, for the first time, continuous monitoring of the temperature, salinity, and velocity of the upper ocean, with all data being relayed and made publicly available within hours after collection.

As over 90% of the observed increase in heat content of the air/land/sea climate system over the past 50 years occurred in the ocean [Levitus et al., 2001], Argo will effectively monitor the pulse of the global heat balance. It will improve our understanding of the ocean's role in climate, as well as spawning an enormous range of valuable ocean applications. Argo is a major contributor to the WCRP's Climate Variability and Predictability Experiment (CLIVAR) project and to the Global Ocean Data Assimilation Experiment (GODAE). The Argo array is part of the Global Climate Observing System/Global Ocean Observing System (GCOS/ GOOS).’ (ARGO, 2005)

The floats are contributed by many countries but all data are freely available via the ARGO website or through participating institutes. Deployments began in 2000 and by January 2005, the tally of floats deployed worldwide was 1584, as shown in Figure 1 below (ARGO, 2005) During August 2005, the target of 2000 float deployments had been reached.



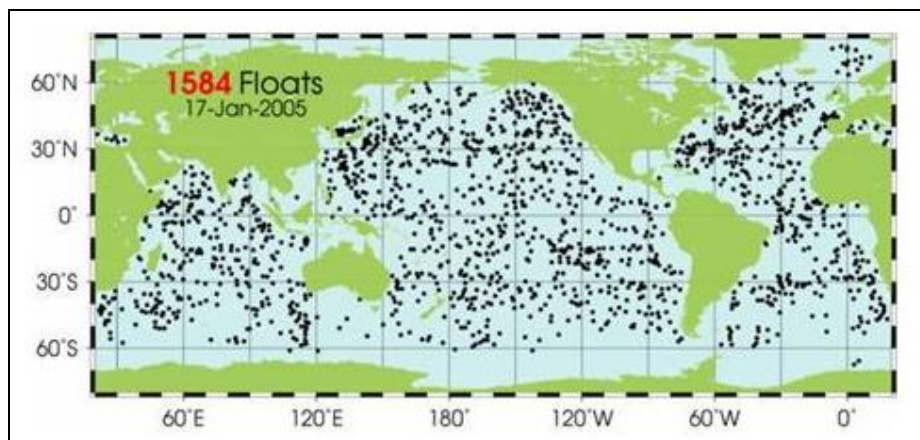


Figure 1: ARGO deployments as of January 2005.

Simply put, the ARGO floats are self-contained units that control their own buoyancy. After deployment, they sink to a depth of 1000m. There they remain for the next 10 days, before dropping down to 2000m. Upon reaching that depth, they return to the surface, taking measurements along the way. These data are then transmitted via satellite to their home base before the ARGO buoy submerges, to start the process again. Most incredible is their battery, and therefore operational, life of over six years!

This week saw us launch two of our four ARGO floats. Both launches went off without a hitch and the buoys are transmitting back to home base perfectly (Figure 2). Thank you to all of those who helped with the launches and to all those spectators who provided moral support (Figure 3)!



Figure 2: Deployed ARGO buoy 2326



Figure 3: Chief Sara and ARGO buoy 2326.

Those interesting in following the progress of our floats should log on to the PMEL website (it is easier than the ARGO website) <http://floats.pmel.noaa.gov>. Clicking through to "data" gives you a map of the Pacific showing where all the PMEL floats last reported.

"Present Status" will then give a list of all the floats; each float number is a link to its data (and you can choose profile, section, trajectory, or engineering). The floats have about six different numbers that can identify them depending who is asking. Alternate numbering schemes are still a bit of a problem even on the PMEL web site: the float has a controller that has a different serial number than the one printed on the hull; it reports the controller number, so you'll need to know the translation to look up floats deployed by the Jordan.

Hull number 2326 has board number 2570

Hull number 2327 has board number 2571  
Hull number 2328 has board number 2572  
Hull number 2329 has board number 2573

ARGO. ARGO Home Page. <http://www.argo.ucsd.edu/>. January 2005.

Levitus, S., J. I. Antonov, J. Wang, T. L. Delworth, K. W. Dixon, and A. J. Broccoli. 2001.  
*Anthropogenic warming of Earth's climate system*. Science **292(5515)**: 267-270.

Date	CTD's	XBT's	Bongo Tows	Comments
10/13	1	3	1	
10/14	0	0	0	Dock in San Francisco for repairs
10/15	0	0	0	In port for repairs
10/16	0	0	0	In port for repairs
10/17	0	0	1	Depart from San Francisco
10/18	1	3	1	
10/19	2	3	1	

#### **Squeakly Report (Liz Zele and Laura Morse)**

Due to our extended stay in San Francisco for repairs and shelter from rough weather, we haven't a peep to report. Hopefully, our days before landing in Astoria are more fruitful!